BROOKHAVEN NATIONAL LABORATORY

BNL Radiological News

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Successful BGRR ALARA Project

Information from the Radiological Control Division

The Brookhaven Graphite Research Reactor (BGRR) recently completed work on removal of the heavily contaminated Below Ground Duct (BGD) Filters. During its operation air was used to cool the research reactor. Filtered cooling air was drawn through the fuel channels removing heat from the fuel elements and graphite. Hot exhaust air flowed out of the reactor and out of the building through two underground concrete ducts. The air was filtered and cooled, and then drawn through fans and discharged into the High Flux Beam Reactor (HFBR) stack.

There were two filter banks; one located in the north BGD and a second in the south BGD. Both were posted as High Radiation Areas and High Contamination Areas. The south filter bank contained approximately twice the activity as the north filter bank. The source of the filter activity was due to numerous fuel element failures during the reactor's operating history (operations commenced in 1950 and the reactor was permanently shutdown in 1968). On-contact gamma dose rates ranged from 500 mR/h to 900 mR/h, and the gamma exposure rates six feet from the filters averaged 100 mR/h. On-contact beta dose rates averaged about 1.0 Rad/h. The primary filter contaminants were ^{90}Sr (beta emitter), ^{137}Cs (gamma emitter), and ^{241}Pu (alpha emitter).

The approach towards keeping personnel exposures ALARA (As Low As Reasonably Achievable) included:

1. Applying a fixative to the filters to minimize the radioactive inventory available for resuspension in air. This allowed the use of air-purifying respirators (APRs) for periodic personnel access rather than the more limiting self contained breathing apparatus (SCBA);

2. The use of remote-controlled equipment (i.e., diesel powered Brokk Manipulator) to minimize personnel entries into the BGDs, thereby minimizing personnel exposure to the radiological and industrial hazards associated with removal of the filters;

3. The use of a shredder/vacuum/separator system which carried the shredded filters directly from the BGD to the waste burial container to minimize handling operations.

The collective dose for removal of the 640 filter elements was 2.4 person-rem. The work was performed over a 4-month period without any personnel contaminations, injuries or loss of control of radioactive material. The savings in external and internal dose and minimization of personnel exposure to other BGD industrial hazards justified the purchase and use of the Brokk Manipulator, which continues to be used in removing the BGD primary liner.

For more information, contact: Tom Jernigan, ext. 8244, tjernigan@bnl.gov.

Radiological Training Options

Information from the Training and Qualifications Office

Need to renew your Radiological Worker 1 qualification? There are now four different ways to get your training updated for another two years.

1. To refresh your knowledge of the subject in its entirety, take the two-part web and classroom combination Radiological Worker 1 course. The first part of the course is available on the web at: at: http://training.bnl.gov/. Once the web-based portion is successfully completed, you may register for the second part of the course, which is

a classroom course offered every Tuesday morning. You must complete Part One before attending Part Two.

2. In addition to this combination option, the full-day classroom Radiological Worker 1 course is still offered once a month. Classroom course attendance requires preregistration.

3. Anyone who has previously completed BNL's Radiological Worker 1 course can take a 50-question challenge exam to requalify. This challenge exam is available on the computer in your facility by contacting your Training Coordinator.

4. RW1 challenge exams (paper-based exam) are also offered every Monday from 9:00 to 10:30 A.M. in Building 703.

If you decide to take the challenge exam, be sure to review the appropriate study guide, available from the Training web site. Failure of the challenge exam will result in the immediate loss of your radiological worker qualification. All written exams must be taken in English without assistance from others and without dictionaries. This is necessary because the RW1 course covers both radiological postings and radiological work permits (DOE required elements of the entry control program) which are required to be in English. Contact 6252 if you have any questions about how to complete or register for radiological training.

For more information, contact:
Phil Harrington, ext. 5669, harringt@bnl.gov.

Radiological Work Requirements

Information from the Radiological Control Division

When you show up for work you need your tools to do the job properly and safely. In radiological work a necessary tool for proper safe completion of the job is the correct training and qualifications. All individuals who perform work in Radiological Areas are responsible to verify that they have the training and qualifications to perform their work under the associated Radiation Work Permit (RWP). Supervisors who assign individuals to perform tasks controlled by a RWP are also responsible to ensure that only fully trained and qualified personnel are assigned. Untrained and unqualified personnel who work in these areas present a risk to themselves, co-workers and potentially the general public. Working without proper qualifications represents a non-compliance with the site procedures and the BNL Radiological Control Manual. These non-compliances can lead to occurrence reports and fines to the lab as well as individuals. Before signing into any RWP make sure you have the right training and qualifications. If you are unsure contact your supervisor, Training Coordinator, ES&H Coordinator or Facility Support Representative. They will be able to assist you in determining the requirements of the RWP and whether you are trained and qualified to perform work authorized by the RWP.

For more information, contact: Dennis Ryan, ext. 5528, dryan@bnl.gov.

RadCon Program Question:

All of the following are true of the BNL ALARA Program except:

a) It is BNL policy that radiation exposures be maintained below regulatory limits.
b) Each Department/Division whose collective radiation exposure exceeds one (1) person-rem per year is required to establish a formal ALARA Committee.
c) The use of a respirator to avoid internal dose is encouraged even if it results in an increased total dose (external plus internal).
d) ALARA is everyone's responsibility.

The first person outside of the ESH&Q Directorate to communicate the correct answer to Chuck Schaefer (Schaefer@bnl.gov or X4728) will receive a $25 American Express Gift Cheque.

We are interested in your opinion on the e-mail format of *BNL Radiological News*. If you have suggestions for improvement, please send them to C. Schaefer at Schaefer@bnl.gov or send written comments to him at Building 120.